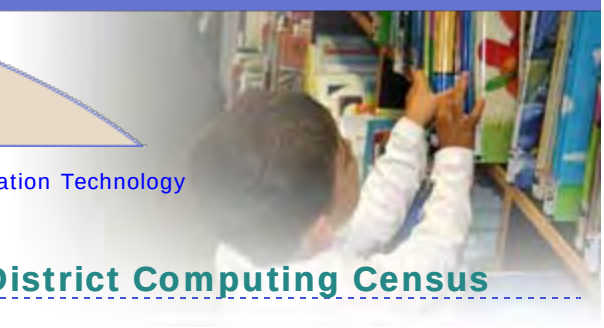

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Missouri Department of Elementary & Secondary Education
School Improvement

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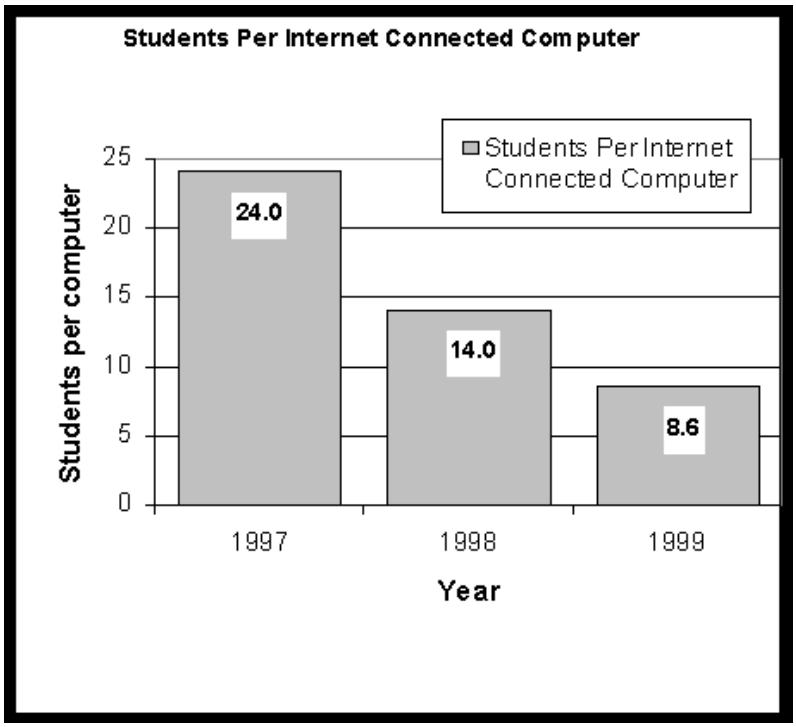
The Internet is penetrating an increasingly large segment of households and businesses. This trend is surely related to US productivity gains that continue to fuel one of the longest economic expansions of all time. E-commerce is transforming the world of work, and beginning to transform the world of learning.

The infusion of networked instructional technology into Missouri classrooms is continuing—almost all of our classrooms are now "wired." Nearly 45,000 computers were added to Missouri classrooms last year.

Yet, with over 900,000 Missouri students in our public schools significant investments in technological infrastructure remain to be made. Also, additional professional development among our Missouri teachers remains an issue. Like knowledge workers everywhere, teachers need to learn how networked computers work. They also need to learn the new teaching strategies that together with the technology can create powerful learning environments for their students.

The "census of technology" is designed to assess our current level of investment in K-12 instructional technologies and to help orient the continuing effort ahead. The 1999 Census of Technology shows Missouri has come a long way in providing schools with new technology.



- Of the 49,936 classrooms reported in Missouri public schools, 74% or 37,197 of them are wired for the Internet – up from 56% in 1998.
- Over 95% of Missouri schools report connections to the Internet.
- Student to Internet-connected computer ratio is currently 8.6 to 1. Down from 24 to 1 in 1997 and 14 to 1 in 1998.

Although the amount of technology available to Missouri's students has grown dramatically, there remains much to do. The evidence is that the impact of technology on student performance is most effective when there is:

- A student to computer ratio of 5 to 1 or less within the classroom
- A change in the way teaching is conducted using technology
- A teacher workstation for every classroom
- Professional development for teachers
- High-speed Internet connectivity

Demonstration projects in Missouri document impressive increases in student performance when (1) teachers and students have access to enough educational technology in the classroom, (2) when that technology is coupled with an integrated curriculum, and the (3) when teachers have effective professional development. These demonstration projects have helped to provide a vision for what is needed in a 21st century classroom (see www.more.net).

OVERVIEW OF THE CENSUS OF TECHNOLOGY

To help create 21st century classrooms that are suitably equipped to meet the needs of students and teachers reliable information is needed about the current levels of education technology and its use. The Missouri Department of Elementary and Secondary Education (DESE), (Division of School Services) is helping to lead that effort by supporting the 1999 Missouri School District Census of Technology and related projects.

The census was conducted from March-August of 1999, by the University of Missouri,

Office of Social and Economic Data Analysis (OSEDA), in cooperation with DESE and the Missouri Research and Education Network (MOREnet). The 1999 census has two parts: a district census and a building census.

The actual census was administered on the World Wide Web, with each district and school having a unique user ID and password to complete the census forms. Now that almost all schools have access to the Internet, this form of data collection is possible. The use of database management systems to record census information and follow up with individual districts/schools contributed greatly to the high response rate and reliability of the 1999 census.

The District Census assesses the levels of planning and training for the district as a whole and concentrates on hardware, software and levels of connectivity for the administrative buildings and offices. Completed by district-level technology specialists, the 1999 District Census includes information for all Missouri school districts (525).

The Building Census assesses planning and training needs for individual school buildings and focuses on hardware and levels of Internet connectivity in computer labs, libraries and classrooms. Completed by building-level technology contacts, the 1999 Building Census includes information for a public school universe of 2,220 schools with complete data for nearly 90 percent of them.

OVERVIEW OF THE CENSUS METHODOLOGY

The 1999 Missouri Census of Elementary and Secondary Education Computing gathered essential baseline information about instructional computing and the Internet among Missouri public schools. A "census" methodology was used to gather information from all Missouri School Districts and schools. Often survey projects draw inferences about a population by measuring the characteristics of a relatively small, usually random, sample of the larger population. However, Missouri School districts have very diverse characteristics and also have widely different levels of technology. To establish definitive baseline information every district and every school was enumerated and data sought from all of them.

Response Rates:

The response rates were high for the 1999 Census: 96% for the district forms, and 99% for building forms. If 1999 data were not available then 1998 estimates were used at the district and building level. Thus, for the purposes of the study, 1998 and 1999 data were combined to create an "**Adjusted 1999"** response—effectively counting every district and building in the state. See appendix C for details.

Design, Distribution and Follow-up

In early 1999, Department of Elementary and Secondary Education Staff, MOREnet staff, and OSEDA staff collaborated in the design of the census questionnaires. Following revisions, final formats were approved. The actual census was administered on the World Wide Web, with each district and school having a unique user ID and password to complete the census forms. In February 1999, Missouri School Districts were informed of the forthcoming technology census with a letter from the Assistant Commissioner of School Services, Dr. Marilou Joyner. The upcoming census was also addressed by Commissioner Bartman in a newsletter to districts. In March 1999, email contact information was solicited from district technology personnel and these email addresses were used to send emails with directions to the World Wide Site for the census questionnaires. These emails included

all necessary directions, user IDs and passwords for filling out the census. Between March and August, an extensive follow-up was conducted by OSEDA staff and Department of Elementary and Secondary Education staff. These follow-up activities included over 3,000 phone calls to district/school personnel. On August 31st, the census database was closed for processing.

1999 CENSUS OF COMPUTING DISTRIBUTION AND FOLLOW-UP ACTIVITIES

During the first week of March 1999, Dr. Marilou Joyner sent a letter to all District Administrators thanking them for their support of the 1998 Census and asking for their support of the 1999 Census.

- March, 1999 district technology contacts were asked for an email address to send them necessary information.
- During the third week in April a second emailing was sent to all the Building points of contact which had not responded.
- During the second week in April follow up telephone calls were made by OSEDA personnel to districts and buildings that had not responded. Non-responding building and district contacts were continuously contacted through August.
- During the first week of July, DESE personnel made phone calls to several larger districts that had not responded. OSEDA made more follow-up telephone calls to each of the points of contact and, by the second week of July, if the point of contact was not available, the Superintendent's office was contacted. Over 3,000 follow-up phone calls were made.
- On August 28,1999, the Census of Technology database was closed for analysis. By September 14, preliminary data were made available to DESE for reporting purposes. Summaries for individual districts were posted to the WWW in the last week of September. Final summaries and these WWW pages were completed by November 27, 1999.

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The section below provides a statewide summary of results by district and by building for key indicators regarding technology planning, training, hardware, Internet connectivity, and Year 2000 compliance. It is followed by a review of the census methodology.

Detailed responses for the district and building census forms are provided in Appendix A and B.

Appendix C is a detailed review data processing procedures used for the on-line data collection forms.

On-line summaries for each district are available on the DESE web site at /computingcensus/1999/summary.html. These summaries provide two years of data for each district and a comparative review of the statewide indicators.

PLANNING:

DISTRICTS

- Ninety-six percent of the districts have a technology plan, and 93% had one last year. Fifty three percent of these plans cover a five-year period, compared with 50% in 1998.
- Eighty-three percent of school buildings have a building technology plan in 1999, compared with 73% in 1998. Ninety six percent report that their building plan is part of the district plan.
- Ninety-five percent of districts include technology as part of their Comprehensive School Improvement Plan, up from 92% in 1998.
- Eighty-two percent of district technology plans were approved by DESE for 1999, up from 71% in 1998. Approval is required for participation in the e-rate program. (The nationwide Universal Service Fund (E-rate) is being supported through an assessment to all providers of telecommunication services. The funding is

available for telecommunication services provided after January 1, 1998, through June 30, 1999 to all schools and libraries that apply, on a first-come, first-served basis.)

- Over 70% of the 1999 plans covered the following items; hardware/peripherals, school computer software, internal connections, staff training, curriculum integration, and maintenance of equipment. Only half of the 1998 plans covered the school's electrical wiring, while 53% of the 1999 plans covered wiring.
- Who is making the decisions about technology acquisition and use within a district? The following are presented in 1999 rank order, with 1998 and 1999 percentages:

Group involved	1998	1999
Teachers	85%	90%
Superintendent	28%	90%
Principals	11%	89%
Technology team	50%	84%
Library Media Specialist	83%	82%
School Board Members	76%	73%
Parents	19%	67%
Instructional technology director	20%	57%
Curriculum director	69%	31%
Consultants	86%	26%
Chief Financial Officer	83%	20%
Business partners	14%	19%
Other	12%	17%
Director of Management Information	63%	12%

- Twenty-seven percent of the districts partnered with a business or higher education institution to support technology in 1999, up from 22% in 1998.

SCHOOL BUILDINGS

- Eighty-three percent of schools have a technology plan, up from 71% in 1998. Of these schools, 95% of the building plans are part of the district plan.
- Over 75% of building technology plans cover computer software, internal connections, computer maintenance, and curriculum integration.
- Ninety-five percent of schools have a school improvement plan, and 99% of these schools' plans include technology as a component.
- Twenty-nine percent of schools partner with a business or higher education institution to support technology. This is an increase from 23% in 1998.

TRAINING:

DISTRICTS

- Instructional integration was ranked the highest priority for technical assistance with educational technology.

Areas for which districts gave a high priority ranking for technical assistance (1999)	Pct. Of Schools
Instructional integration	73%
Curriculum integration	72%
Network/wiring	45%
Technology planning	44%
Basic operations	33%
Information systems	33%
Procurement	24%
Budget planning	20%
Community awareness	19%

- In 1998 and 1999, 7% of the districts required teachers to demonstrate technology skills for employment or continued employment within the district.
- Those districts requiring demonstration of technology skills by their teachers, evaluate the teachers by monitoring professional development hours (4%), hands-on-evaluations (4%), and transcripts (2%).
- Fifty-nine percent of school administrators are at an intermediate skill level in the use of technology. This is up from 50% in 1998.
- Sixteen percent of Missouri school districts have technology requirements for students to advance.
- District personnel estimate that 70% of sixth graders are computer literate.

SCHOOL BUILDINGS

- Ninety-five percent of schools have a school improvement plan, and 99% of these schools include technology as a component of their plan.
- Compared with the 1998-1999 school year, 54% of buildings plan to increase the number of scheduled professional days scheduled for technology training, 42% indicated that scheduled days would remain the same, and 4% said they would reduce scheduled days for technology training.

HARDWARE:

DISTRICTS

- District-level staff and outside vendors were most commonly responsible for technical maintenance/support in the district for both 1998 and 1999.

Responsible persons	1998	1999
District staff	70%	73%
Outside vendors	65%	69%
School certified staff	44%	51%
Contractors' agreement	22%	22%

School classified staff	15%	17%
Students	10%	13%
Parents/community members	3%	5%
Regional centers/units	2%	3%
No one	0%	0%

- IBM compatible computers are the most common computers in use in business/administrative offices. The totals in the table below do not add to 100% because many districts use both IBM and Apple computers.

Percent of districts reporting numbers and types of computers in district business/administrative offices			
IBM		**Apple/Mac**	
1998	**1999**	**1998**	**1999**
77%	97%	23%	22%

- Missouri school districts have spent or budgeted $43,321,919 for computer hardware and peripherals in the 1998-99 school year. During the same period, $7,075,765 was spent or budgeted for instructional software, and $3,991,114 for professional development.
- Districts estimate that they will spend $3,278,122 on year-2000 compliance.

SCHOOL BUILDINGS

- There are 176,150 computers in Missouri school classrooms, up from 131,777 in 1998. This is an increase of 34%.
- The ratios of students to computers in Missouri has become much smaller between 1998 and 1999.

Ratio	**1998**	**1999**	**Pct. Change**
Students per computer	6.4	4.8	-25%
Students per Internet capable computer	8.3	6.1	-27%
Students per Internet connected computer	13.5	8.6	-36%

INTERNET CONNECTIVITY:

DISTRICTS

- Eighty-five percent of district offices have a direct connection to the Internet. Of these, 77% have a T1 connection.
- Seventy-five percent of districts require parent signatures for students to access the Internet, up from 68% in 1998.

SCHOOL BUILDINGS

- Internet-connected computers in classrooms have increased from 62,118 in 1998 to 98,682 in 1999. This is an increase of 59%.
- The number of students per Internet connected computers has decreased dramatically between the 1998 and the 1999 census of technology. There were 13.5 students per Internet connected computer in 1998, and 8.6 in 1999 – a reduction of 36%.
- The percentage of schools with a direct connection to the Internet has increased from 68% in 1998 to 83% in 1999.
- Ninety-five percent of schools have access to the Internet, up from 91% in 1998. Of these schools, 24% have one or more dial-up links to the Internet.

YEAR 2000 COMPLIANCE:

DISTRICTS*

- Five percent of Missouri school districts indicate that they have successfully implemented complete year-2000 programs.

Phase	In-process	Complete	Don't know
Awareness (Y2K information gathering and dissemination)	50%	46%	4%
Assessment (identifying systems needing repair/replacement)	70%	25%	5%
Renovation (repairing/replacing systems)	78%	7%	15%
Validation (successful testing after repairing/replacing systems)	78%	7%	15%
Implementation (using renovated/repaired systems in normal service)	72%	5%	23%

* This question only on the district form.

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PLANNING:

1. Does your DISTRICT have a technology plan?

96% Yes **4%** No

If Yes,

A. Does your **district** technology plan cover the following? (Check all that apply)

98% Hardware/Peripherals	93% School Computer Software	89% Internal Connections
76% Review Requirement	98% Staff Training	88% Curriculum Integration
83% Maintenance of Equipment	67% External Conditions	53% Capacity of the school's electrical wiring

B. Is your DISTRICT technology plan for: **3%** 1 year **45%** 2-4 years **52%** 5 or more years
Year plan last revised: The modal response was **"1998" (42%)**

2. Who is involved in the **district** decision-making related to technology acquisition and use? (Check all that apply)

84% Technology Team	73% School Board Members
57% Instructional Technology Director	82% Library Media Specialist

12% Director: Management Information Systems	20% Chief financial officer
26% Consultants	17% Other
90% Superintendent	67% Parents
31% Curriculum Director	90% Teachers
89% Principals	18% Business partners

3. Is technology a component in your Comprehensive School Improvement Plan?

95% Yes **5%** No

4. Does your **district** "partner" with a business or higher education institution to support technology?

27% Yes **73%** No.

TRAINING:

5. Who is responsible for technical maintenance and/or support of hardware in your **district**? (Check all that apply)

73% District staff **17%** School classified staff **69%** Outside vendors
5% Parents/community members **22%** Contractor's agreement
3% Regional centers/units **13%** Students **0%** No one
51% School certified staff

6. If your district were to receive technical assistance for educational technology, what would your training priorities for the person(s) in #5 be? (1-high 2=medium 3=low). Please circle best response.

(44%)=1 (40%)=2 (16%)=3 Technology planning	(20%)=1 (56%)=2 (24%)=3 Community awareness/PR
(20%)=1 (39%)=2 (41%)=3 Budget planning	(72%)=1 (21%)=2 (7%)=3 Curriculum integration
(24%)=1 (48%)=2 (28%)=3 Procurement	(33%)=1 (58%)=2 (9%)=3 Information systems
(45%)=1 (35%)=2 (20%)=3 Network/wiring	(73%)=1 (22%)=2 (5%)=3 Instructional integration
(33%)=1 (41%)=2 (26%)=3 Basic operations	

7. Are your teachers required to demonstrate technology skills for new or continued employment with your **district**?

7% Yes **93%** No.

If yes, how are they evaluated (check all that apply):

2% Transcripts **4%** Hands-on evaluation **4%** Professional development hours **3%** Other **See appendices**

8. Please estimate the percentage of administrators in your **administrative building/district office(s)** at each skill level in the use of technology.

25% Beginner **59%** Intermediate **16%** Advanced

HARDWARE AND SUPPORT:

9. Please estimate the total number of FTE responsible for technical maintenance and support of hardware?

District-level staff: **Mean=2.0** School-level staff: **Mean=2.5**

10. Please identify the number of computers, by type, that are currently in use in your **administrative building/administrative office(s)**.

Apple/Macs

AppleII/IIe/GS	Mac 68000	Mac 20/30	Mac 40	Mac Power PC	IMAC	Mac power book
281	61	144	188	708	97	253

IBM Compatible

386 or earlier	486	Pentium 586	Pentium MMX	Pentium II	Pentium Pro 686	PC laptops
433	1910	2412	2239	2260	78	494

11. How many of the these personal computers are running:

(PC): Windows 3.1 or earlier **1520 (15% of IBMs)** Windows 95 **7179 (73% of IBMs)** Windows 98 **1060 (11% of IBMs)** Windows NT **143 (1% of IBMs)**(MAC): OS 7.5x **173 (10% (14% of MACs)**
OS 7.6x **249 (14% of MACs)** OS 7.8x or later **661 (38% of MACs)**

12. Regarding your technology plan, how many computers will be purchased for the **administrative building/administrative office(s)?:** (State total followed by district mean)

PCs: This school year? **877 (2)** Next year? **1074 (2)**
Future years? **1336 (3)**
MACs: This school year? **106 (.2)** Next year? **93 (.18)**
Future years? **105 (.2)**

13. Please estimate how many of the following your district plans to purchase **FOR YOUR SCHOOL BUILDINGS** in the next 2 years. (State total followed by district mean)

823 (2) Interactive whiteboards **805 (2)** Interactive whiteboard projectors
35,933 (69) Computers **12,396 (24)** Computer upgrades

INTERNET CONNECTIVITY -- DISTANCE LEARNING

14. Do the **administrative building/administrative office(s)** have a direct link to the Internet (dedicated connection – NOT dial-up?) (totals may not add to 100% due to rounding)

85% Yes **15%** No

If yes, what is the bandwidth capacity? (check all that apply)

77% T1 **23%** 56 kbps **2%** Cable modem **2%** Other (please specify)

15. Do the **administrative building/administrative office(s)** have a local area network (LAN)?

82% Yes **18%** No

If yes:

A. How many total computers are connected to the LAN? **15975 Computers**

B. How many of the above computers are servers? **529 (3%)**

C. What operating system does your server(s) use? (check all that apply and indicate how many)

113 Windows NT how many **379** **294** NOVELLE how many **2952**
32 Apple Share how many **270** **48** Other (please specify) **See appendices**

16. Are your administrative building/administrative office(s) and school buildings connected to each other by a Wide Area Network (WAN)?

46% Yes **44%** No

If yes, how many buildings are currently connected? **1556**

How many buildings remain to be connected? **169**

17. Does your **administrative building/administrative office(s)** have at least one office equipped for two-way interactive video/audio communications with other locations?

7% Yes **93%** No

A. If yes, check all that apply. 68%, n=26 Full motion video capability

32%, n=12 Compressed video capability

B. If yes, How many of the following video links are there in your district buildings?

One-way video w/two-way audio or PC link **4%, n=39**
Two-way video and audio **1%, n=38**

18. Does your **district** require parents' signatures before students can access the Internet?
(indicate yes with a check mark)

63% Elementary **74%** MS/Jr. High **69%** High school

TECHNOLOGY FUNDING:

19. Amount for which items were purchased or budgeted: (State total followed by district mean in parentheses)

ITEMS PURCHASED OR BUDGETED	Last FY	Current FY	Next FY
Computer & peripheral hardware (modems, printers, CD-ROM)	$36,674,750 ($71,351)	$43,321,919 ($178,251)	$33,742,,022 ($65,391)
Instructional software for classroom use	$5,549,295 ($10,838)	$7,075,765 ($13,659)	$5,227,178 ($10,149)
Professional development for educational technology	$3,289,377 ($6,437)	$3,991,114 ($7,734)	$3,412,493 ($6,626)
Internet charges	$1,590,353 ($3,082)	$1,631,986 ($3,156)	$1,382,099 ($2,673)
Distance learning (cable TV, satellite, etc.)	$2,098,067 ($4,154)	$2,250,309 ($4,473)	$2,109,005 ($4,103)
Service and/or support	$6,176,113 ($11,923)	$7,875,227 ($15,115)	$8,147,120 ($16,300)

20. Did your **district** apply for the E-rate discount for the 12-month period of July 1, 1999 through June 30, 2000?

60% Yes **40%** No

If yes, what is the estimated value of your discount?

State=**$13,901,413** District mean= **$45,879**

21. Has your **district** purchased technology products or services off of the Missouri Prime Vendor Contract?

4% Yes **96%** No

If yes, in what percentage of your core content areas? 26%, n=20 (mean of the 20 respondents answering this question)

TECHNOLOGY USAGE:

22. Has your **district** incorporated technology into your curriculum guides and academic standards?

73% Yes **27%** No

If yes, in what percent of your core content areas?

51% (mean of the 382 respondents answering this question)

23. Does your **district** have any technology proficiency requirements for students to pass to the next level?

16% Yes **84%** No

24. What **district** information can be accessed from an outside location via the Internet? (check all that apply)

46% District calendar **38%** School board members **6%** School board agenda & minutes **44%** District staff **15%** District newsletter
9% District curriculum **22%** Student work
31% Annual report of school district data **22%** Other (please specify) **see appendices**

25. Please estimate the total staff FTE responsible for the training and support of teachers in integrating the use of technology into curriculum and instruction.

District-level staff: Mean=**2** School-level staff: Mean=**7**

26. Please indicate the total number of email accounts provided by the district for each user group (state sum followed by district mean in parentheses.).

User group	**# of email accounts: state (district means)**
Students	50,908 (98) students
Teachers	45,370 (87) teachers
Administrators	64 (12) administrators

27. Please estimate the percent of the **district's** 6th graders who are computer literate (able to perform basic computer operations)?

69.91%

28. Does the **district** have its own mail server or plan to install one?

60% Yes **40%** No (District mean percentages)

If yes, what email software do (or will) you use? **See appendices**

29. Does the **district** have its own web server or plan to install one?

52% Yes **48%** No (District mean percentages)

If yes, what web software do (or will) you use? **See appendices**

30. Does the **district** have its own proxy server or plan to install one?

28% Yes **72%** No (District mean percentages)

If yes, what proxy software do (or will) you use? **See appendices**

31. Does the **district** have its own firewall or plan to install one?

39% Yes **61%** No (District mean percentages)

If yes, what firewall software do (or will) you use? **See appendices**

YEAR 2000 COMPLIANCE:

32. Does your district have a written plan for achieving year 2000 compliance?

23% Yes **77%** No

If yes, what is the projected cost? **State total= $3,278,122District average= $6,440**

If yes, who is involved (check all that apply)? District **28%** Consultant **11%** Vendor**15%** Other **2%** **See appendices**

33. Please indicate the status of the following phases of Y2K planning in your **district**. (District mean percentages)

Y2K Phase	COMPLETE	IN-PROCESS	DON'T KNOW
Awareness (Y2K information gathering and dissemination)	46%	50%	4%
Assessment (identifying systems needing repair/replacing)	25%	70%	5%
Renovation (fixing systems)	7%	78%	15%
Validation (successful testing after renovation/replacement)	5%	72%	23%
Implementation (using renovated/replaced systems)	5%	71%	24%

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PLANNING

1. Does your school have a technology plan?

No (if no, then skip to #2) **83%** Yes **17%**

If yes:

A. Is the school plan part of the district plan? **96%** Yes **4%** No

B. Does your school technology plan cover the following? (check all that apply)

95% Hardware/peripherals **91%** School computer software
80% Internal connections **66%** Review requirement **93%** Staff training
84% Curriculum integration **77%** Maintenance of equipment
56% External connections **47%** Capacity of the school's electrical wiring

C. Is your school technology plan for: **5.7%** 1 year **46%** 2-4 years

48% 5 or more years

Year last revised: 1997 **25%** 1998 **38%** 1999 **23%** Other **14%**

2. Who was involved in developing, implementing and evaluating the school technology plan? (Check all that apply)

87% Technology team **88%** Principal **91%** Teachers **63%** Parents **44%** Instructional technology contact
80% Library media specialist
22% Curriculum consultant **30%** Business representatives
18% Other (Please specify): **See appendices**

3. Does your school have a school improvement plan?

95% Yes **5%** No

If yes, is technology a component? **99%** Yes **1%** No

4. Does your school partner with a business or higher education institution to support technology?

29% Yes **71%** No

If yes, who? **See appendices**

TRAINING

5. Who is responsible for technical training and/or support of staff in your school? (Check all that apply)

82% District staff **24%** School classified staff
51% School certified staff **32%** Outside vendors
11% Contractor's agreement **12%** Regional centers/units **5%** Students
3% Parents/community members **<1%** No one

6. Please estimate the number of staff FTE responsible for the technical training and support needs of your building staff.*

District-level staff: **2.3** Building-level staff: **1.0** *(school mean)

7. Please rank your educational technology training priorities for this school's faculty (1=high 2=medium 3=low): *

1=56% 2=29% 3=15% Basic computer operations	1=21% 2=42% 3=37% Hypermedia operations
1=44% 2=42% 3=15% Word processing	1=19% 2=41% 3=40% LAN applications/resources
1=15% 2=47% 3=38% Database applications	1=62% 2=30% 3= 8% Instructional delivery w/instructional technology
1=53% 2=40% 3= 7% Internet applications	1=61% 2=31% 3= 7% Curriculum development /education technology
1=37% 2=48% 3=15% Evaluating Internet information	1=60% 2=20% 3=21% Other (Please specify) **see appendices**

* May not sum to 100% due to rounding

8. Please rank the professional development needs of the building's technical support staff (1=high 2=medium 3=low)*

1=41% 2=44% 3=14% Technology planning	1=64% 2=31% 3= 5% Curriculum integration
1=36% 2=35% 3=29% Network/wiring	1=29% 2=42% 3=29% Procurement
1=32% 2=47% 3=21% LAN applications	1=19% 2=52% 3=29% Database management
1=23% 2=45% 3=32% Budget planning	1=31% 2=50% 3=19% Community awareness

1=22% 2=37% 3=41% Distance learning

* May not sum to 100% due to rounding

9. How many hours per school year does your building offer or schedule professional development to upgrade technology and computer skills in the following areas? (school mean hours)

Training	Administrators	Teachers
Introduction to operations	4.2 Hours	6.3 Hours
Using software applications	9.9 Hours	16.3 Hours
Using Internet resources	5.4 Hours	9.1 Hours
Curriculum integration	4.4 Hours	8.1 Hours
Teaching applications	3.3 Hours	7.9 Hours

10. Are teachers required to demonstrate technology skills for employment/continued employment with your school?

9% Yes **91%** No

If yes, how are they evaluated? (check all that apply) **47%** Transcripts
39% Hands-on evaluation **34%** Professional development hours
30% Other (please specify): **See appendices**

11. Please estimate the percentage of principal(s), teachers, and technological support staff in your school at each skill level in terms of technology use.

Faculty/staff	Beginner %	Intermediate %	Advanced %
Principals	23%	62%	14%
Teachers	34%	50%	15%
Technology support staff	3%	24%	51%

12. During the current school year, how many days has your school scheduled for professional development activities where teachers can learn/upgrade their technology and computer skills?

Mean=3.5

13. Compared with the 1998-99 school year, do you think the number of scheduled professional days for technology training will:

4% Decrease **42%** Remain the same **54%** Increase

HARDWARE

14. Who is responsible for technical maintenance and/or support of hardware in your school? (Check all that apply)

85% District staff **27%** School classified staff
47% School certified staff **54%** Outside vendors **22%** Contractor agreement
2% Regional centers/units **7%** Students **2%** Parents/community members
<1% No one

15. Please estimate the number of staff FTE responsible for the technological maintenance and support of hardware in your school.

Staff FTE: **1.37**

16. Please specify the number of computers, by type, that are currently in use in the following locations within your school: (state totals followed by per-room-type mean in parentheses)

Apple/Mac	Computer labs	Instruc-tional rooms	Library media center	Principal office(s)	Other locations
Apple II/IIe/GS	2,077 (1.1)	9,581 (5.1)	495 (0.3)	32 (0.0)	465 (0.2)
Mac 68000 or earlier	2,044 (1.1)	3,648 (1.9)	402 (0.21)	67 (0.0)	279 (0.1)
Mac 68020 or 68030 series	2,834 (1.0)	3,887 (2.0)	493 (0.3)	149 (0.1)	300 (0.2)
Mac 68040 series	3,179 (1.7)	4,636 (2.3)	558 (0.3)	237 (0.1)	357 (0.2)
EMATES	78 (0.0)	250 (0.1)	49 (0.0)	3 (0.0)	30 (0.0)
Power PC	6,033 (3.0)	7,426 (3.8)	1,382 (0.7)	377 (0.2)	512 (0.3)
Mac Powerbook	246 (0.1)	683 (0.3)	277 (0.1)	146 (0.1)	192 (0.1)
IMAC	843 (0.4)	746 (0.4)	152 (0.1)	72 (0.0)	43 (0.0)

PC compatible	Computer labs	Instruc-tional rooms	Library/media center	Principal office(s)	Other locations
386 or earlier	4,504 (2.4)	5,590 (3.0)	1,160 (0.6)	388 (0.2)	768 (0.4)
486	10,444 (5.5)	12,947 (6.7)	2,596 (1.4)	1,368 (0.8)	1,847 (1.0)

Pentium 586	10,558 (5.6)	13,145 (7.0)	3,029 (1.6)	2,098 (1.1)	1,705 (0.9)
Pentuim MMX	8,508 (4.3)	10,457 (5.3)	1,956 (1.0)	1,063 (0.5)	1,217 (0.6)
Pentium II	8,508 (4.3)	8,678 (4.3)	1,765 (0.9)	1,145 (0.6)	1,213 (0.6)
Pentium Pro (686)	620 (0.3)	609 (0.3)	147 (0.1)	72 (0.0)	114 (0.1)
PC laptop	339 (0.2)	955 (0.5)	394 (0.2)	373 (0.2)	608 (0.3)

17. How many personal computers in your school are running: : (state totals followed by per-school mean in parentheses)

(PC): Windows 3.1 or earlier **25,008 (13.4)** Windows 95 **78,203 (39.8)**
Windows 98 **10,985 (5.5)** Windows NT **1,764 (.88)**
(MAC): OS 7.5x **15,114 (7.5)** OS 7.6x **6,998 (3.5)** OS 7.8x or later **5,887 (2.9)**

18. Please indicate the number of computers in your school that are multimedia equipped : (state totals followed by per-school mean in parentheses)

23,723 (12.2) Macs **73,802 (37.5)** PCs

19. Regarding your technology plan, how many computers will be purchased for your school during: (state totals followed by school mean in parentheses)

PCs : This school year? **14,187 (7.1)** Next year? **16,845 (8.6)**
Future years? **20,848 (11.1)**
MACs: This school year? **2,528 (1.3)** Next year? **3,241 (1.6)**
Future years? **7,762 (3.9)**

20. Please indicate the number of rooms in the following locations, within your school. (state totals followed by per-school mean in parentheses)

Number of...	Computer labs	Instruc-tional rooms	Library media centers	Principal office(s)	Other	Total*
ROOMS total	2,824 (1.42)	49,936 (25.1)	2,025 (1.0)	3,902 (2.0)	5,571 (2.9)	62,767 (31.5)
ROOMS wired for the Internet	2,433 (1.2)	37,197 (18.7)	1,848 (.9)	3,433 (1.7)	4,260 (2.2)	49,109 (24.6)
ROOMS with one or more multimedia equipped computers	2,187 (1.1)	25,957 (12.9)	1,511 (.8)	2,418 (1.2)	3,759 (1.9)	33,342 (16.6)
ROOMS with one or more multimedia equipped computers	2,034 (1.0)	23,155 (11.5)	1,376 (.7)	2,305 (1.1)	2,592	30,047

with direct connection to the Internet					(1.3)	(14.9)
ROOMS with one or more multimedia equipped computers with direct connection to the Internet **AND** with a dedicated printer and a dedicated projection device	1,228 (.6)	6,512 (3.4)	648 (.3)	392 (.2)	438 (.2)	8649 (4.5)

* Totals may not add to sum of room types due to variations in calculation

21. Please indicate the number of computers in the following locations, within your school. (state totals followed by per-school mean in parentheses)

Number of...	Computer labs	Instruc-tional rooms	Library media centers	Principal office(s)	Other	Total
Computers connected to the Internet	41,410 (21.2)	47,629 (24.3)	9,466 (4.8)	5,063 (2.6)	4,596 (2.4)	105,872 (53.7)
COMPUTERS multimedia equipped	33,577 (17.3)	44,053 (22.4)	8,306 (4.3)	4,131 (2.1)	3,600 (1.9)	91,354 (46.5)

22. Please report the number of peripherals in your school. (state totals followed by per-school mean in parentheses)

A. CD-ROM networked	16,814 (8.6)	L. Total color printers	21,510 (10.9)
B. Laserdisc players/DVD	3,885 (2.0)	M. Graphing calculators	17,201 (8.7)
C. VCR units	29,074 (14.5)	N. Scientific calculators	17,463 (8.8)
D. TV monitors	33,210 (16.7)	O. Probeware	861 (0.4)
E. Scanners/digitizers	3,305 (1.7)	P. Fax machines	1,982 (0.9)
F. Digital cameras	2,070 (1.0)	Q. Alpha Smart laptop processors	3,961 (2.0)
G. Assistive/adaptive devices	1,005 (0.5)	R. Interactive television	554 (0.3)
H. Computer projection devices	4,850 (2.5)	S. Interactive whiteboards	174 (0.1)

I. Dot-matrix printers	16,437 (8.4)	T. Satellite receiver	1,117 (0.6)
J. Inkjet printers	27,057 (13.6)	U. Cable TV	16,323 (8.2)
K. Laser printers			7,914 (4.0)

INTERNET CONNECTIVITY – DISTANCE LEARNING

23. Does your school building have access to the Internet?

95% Yes **5%** No

If yes, Who is your Internet provider? 87% MOREnet 11% Other (please specify): **See appendices**

24. Does the school have a direct link (dedicated connection) to the Internet?

83% Yes **17%** No

If yes, what is the bandwidth capacity? **75%** T1 **14%** 56KB
1% Cable modem **9%** Other (please specify): **See appendices**

25. Does the school have dial-up links?

24% Yes **76%** No

If yes, how many modems, by speed, are in the school? (state totals followed by per-school mean in parentheses) **100 (.2)** 14.4K **553 (1.3)** 28.8K
318 (.7) 33.6K **3,498 (7.4)** 56K

26. How many dial-up computer lines are available in the school? (state total followed by school mean in parentheses)

2,185 (1.1)

27. If the school uses dial up links, where are you dialing to? (check all that apply)

46% District **28%** MOREnet **17%** Commercial
17% Other (please specify): **See appendices**

28. Does your school currently have a local area network (LAN) ?

87% Yes **13%** No

If yes:

A. How many computers are connected to the LAN in your building? **Mean=63.6 per school**

B. Of the above computers, how many are servers**? Mean=1.2 per school**

C. What operating system does your server(s) use? (Check all that apply and indicate how many)

22% Windows NT how many **377**
19% Apple Share how many **338**

68% NOVELLE how many **1182**
8% Other (please specify) how many **138**: **See appendices**

29. Is your school connected to another building in your district through a wide area network (WAN)?

62% Yes **38%** No

30. Do students at your school use any of the following to participate in classes originating from remote sites? Check all that apply)

17% Satellite 9% Desktop technologies **25%** Cable TV
11% Interactive TV (video classroom) **2%** Compressed video
2% Other (please specify): **See appendices**

31. If you do not now have any distance learning programs, do you plan on any in the next 2 years?

19% Yes **81%** No If yes, please indicate type: **See appendices**

32. Do you require parents' signatures before students can access the Internet?

75% Yes **25%** No

33. What proportion of students in your school have signed Internet acceptable use policies?

58%

34. Does your school currently use filtering software on your Internet-connected computers?

42% Yes **58%** No

If yes,

A. On what percentage of your Internet connected computers **85%**

B. If yes, what products (for instance, Cyber Patrol, Net Nanny, Surf Watch): **See appendices**

TECHNOLOGY USAGE

35. Please estimate the number of administrators, teachers, and students in your school who routinely use the following applications.

Application	Principal(s) (%)	Teachers (%)	Students (%)
A. Educational software	36.7%	69.1%	76.0%
B. E-mail	76.6%	60.1%	13.1%
C. Web browsing (Net surfing)	69.1%	60.7%	49.6%
D. Ebsco host or other educational database	21.4%	24.8%	21.6%

E. Electronic encyclopedia	20.6%	41.1%	47.6%

36. Please estimate the number of administrators, teachers, and students in your school who routinely use the computer for the following functions.

Functions	Principal(s) (%)	Teachers (%)	Students (%)
A. Computer-generated presentations	25.8%	20.4%	18.3%
B. Writing assignments	64.5%	61.5%	57.8%
C. Research information collection	56.6%	53.5%	52.4%
D. Communicate with parents	53.0%	41.0%	5.1%
E. Lesson plan preparation	8.4%	41.7%	NA
F. Spreadsheet/database (student records)	61.0%	40.3%	NA
G. Keep track of student performance	48.8%	46.8%	NA
H. Communicate with DESE staff	40.6%	10.6%	NA
I. Instructional delivery and presentations	13.4%	20.2%	NA

37. Who is responsible for the leadership and support of teachers in your school in integrating technology into the curriculum?

65% Technology coordinator **54%** School administrator
9% RPDC **6%** Outside vendors **36%** Library/media specialist
16% Other (please specify): **See appendices**

38. What school information can be accessed from an outside location via the Internet? (check all that apply)

23% Schedules **6%** Homework assignments/help **2%** Report cards/attendance
43% Community information **60%** Teacher/school information
15% Other (please specify) : **See appendices**

39. What percent of Internet-connected computers in your school use a web browser at least as current as Netscape 4.0 or Microsoft Internet Explorer 4.0?

mean=61% of computers

40. Who uses the DESE web site? (**http://services.dese.state.mo.us/**)

77% Principals **67%** Teachers **36%** Support staff **5%** Students
1% Other (please specify): **See appendices**

41. What information and/or applications would you like to have available via the DESE web site?

See appendices

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The 1999 Missouri School District Computing Census

Methodology and Filtering of Survey Responses for Inclusion in Results of the 1999 Census of Technology

Back to 1999 Census

In processing the survey data for the current year, each school's responses to comparable questions from last year's survey were used. Thus, for example, if a school did not report on the number of Macintosh computers in classrooms then the corresponding value entered on last year's survey was used. This was intended to reduce the respondent burden and to improve the response rate, since feedback from non-responding schools in the 98-99 survey indicated that a major cause for not responding to the survey was that very little or nothing had changed and they considered it a waste of time. Of course, not all questions were asked last year, so schools that did not fill out the form will have missing data for the new questions on the 1999 survey. As users completed pages of the questionnaire this year, the results were recorded with a time-stamp. There was also a question that asked them about the status of their questionnaire -- was it complete, mostly done, just started or untouched (stored in the *completion_status* variable).

In creating reports, analysis was limited to a universe of schools for which the data were reliable (i.e. for which there were classrooms where there might be computers, etc.). One measurement of reliability was to identify responses that exist within the current master list of schools from the DESE core data database. To accomplish this, a series of filters was applied to eliminate data from the final reporting data sets. The following is a summary of the criteria used to perform these filters, together with some statistics regarding how many schools were effected by each filter

1. **Schools that could not be matched on the DESE core data master list of schools for 1998-99**. There were 47 such schools. The enrollment for these schools is unknown, since we were picking up enrollment data from the core data file. Of these 47 schools, 17 actually had a completion_status value indicating that they had completed the survey. There were 23 elementary schools, 11 junior high or middle schools, 3 high schools, 3 vocational schools and 7 administrative centers. (See postoraBx.lst for a detailed listing of the 47 schools or browse the project.noschl data set - see endnote). That report also lists the 23 schools that were on the DESE master school file that were not matched on the survey data base.)

2. **School type.** Certain types of schools were removed from the datasets used for analysis. The major categories of buildings excluded were **ADM** - administrative centers (62 of these); **PRE** - pre schools (22); and **HOS** - hospital centers (7). In all 97 buildings were excluded based on their type. These 97 buildings reported 2,575 total computers, 468 internet connected and a total enrollment of just over 6000 students.

3. **No computers and no instructional rooms.** It was decided that a building with neither computers nor any instructional rooms should be

excluded from the analysis. There were 84 such schools. We do not believe that there really are 84 buildings out there with no instructional rooms or computers -- we think that most of these cases are the result of incomplete response to the survey (as evidenced by the fact that these 84 buildings reported a total of 378 internet connected computers). These 84 buildings had a total enrollment of just over 24,000.

4. **Large school with no PCs.** The validity of having a school these days with no computers at all in instructional rooms was debated. Should we assume that a building that has not reported any computers has not really reported accurate data? It was decided that it was indeed possible for schools to still have no computers at all, but that it was extremely unlikely in larger schools. Therefore excluded any school with an enrollment of over 300 students and which reported no computers was excluded. There were 17 such schools with a total enrollment of 9530 students. These 17 schools reported 861 internet connected computers (indicating, of course, that the 0 total computers reported represents a failure to respond to these critical questions.)

5. **No enrollment (except vocational).** Eight schools that reported no student enrollment were excluded. Vocational schools never report enrollment so this filter did not apply to them.

A complete list of all schools excluded for reasons 2-5, along with a summary report containing the statistics cited in the above review is contained in the report file excrpt.txt - see endnote.

Schools Not Omitted. It should be noted that some schools that were considered for exclusion from the final analysis were left retained. These were cases where there was evidence that the survey had not been carefully filled out for the current school year (1998-1999). There were 35 schools that were included in the totals where the completion_status item indicated that the surveys were not "complete". This means that data from the previous year were used for these schools. The decision to include these was based on the logic that using year old data would be better than just excluding all these schools (e.g., a more reliable estimate of values was possible). There were other cases where we felt that districts may have responded to the survey but not with as much enthusiasm and completeness as we would have liked.

The response rates for the 1999 Census of Technology can be calculated in several ways. This summary is provided to allow the reader to ascertain the appropriateness of the census information for their particular uses.

Gross 1999 Response Rate

The census population consisted of the entire list of districts and schools contained in The Missouri Department of Elementary and Secondary Education's (DESE) Core Data file as of March 6, 1999 and records from other data sources, such as MoreNet data from previous years. On August 28, 1999, the census was frozen for the purposes of analysis. At that time, any school with census information and which was not contained in the most current DESE Core Data file were excluded from analysis. This exclusion was done in order to allow for coding and data entry anomalies. Of the remaining 525 districts and 2220 schools, 2156 (97%) of buildings and 503 (96%) of districts responded indicating that they had completed the census. These figures constitute the *Gross 1999 Response Rate* for the census.

Adjusted 1999 Response Rate

Although the *Gross 1999 Response Rate* was quite high, there were 22 Districts and 64 buildings that did not complete the census. For these districts, their 1998 census information was brought forward and included as their 1999 census information. This adjustment allowed DESE to make the most reliable estimate of technology parameters possible because the best predictor of 1999 census data is the previous year's data. The resulting *Adjusted 1999 Response Rate* was 100% for districts and 100% for buildings (both calculated based on 525 districts and 2220 buildings).

The School Universe

Some schools, such as early childhood centers and special education buildings, are irregular in their use of technology; these schools were excluded from the universe of schools used to calculate student to computer ratios and other values. Other reasons for exclusion were lack of enrollment data, no rooms were reported, or because the school had enrollment >600 and did not report having any computers. A total of 206 schools were excluded for various reasons (10.7% of the 2220 schools in the final dataset). The *School Universe* used for calculating computer:student ratios consisted of all remaining elementary, junior high, middle and high schools in Missouri (89.3% of the 2220 schools in the final dataset). The 1998 Census of Technology used the same criteria for school type, which makes comparison of the two years' surveys possible. A complete report of excluded schools may be accessed at: **/computingcensus/1999/excrpt.txt**

The files: postoraBx, and excrpt.lst, may be accessed from the census web site, as well.

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1999 Census of Technology: tablesD.sas -- Summarize District Level Survey Data
Response Analysis by Building for 1999 Census of Technology

		Survey Data	Completed	
		Have Survey	Used (Not	survey this
		data?	Filtered)	year
	All			
	#	#	#	
N	schools	%	schools	%	schools	%
---	---	---	---	---	---	---
All	2137.00	2,123	99.3%	2,014	94.9%	2,067	97.4%
Type of School							
ELE	1249.00	1,241	99.4%	1,179	95.0%	1,210	97.5%
HIG	504.00	501	99.4%	478	95.4%	487	97.2%
JRH	59.00	58	98.3%	55	94.8%	58	100%
MID	267.00	267	100%	250	93.6%	261	97.8%
VOC	58.00	56	96.6%	52	92.9%	51	91.1%

The 1999 Missouri School District Computing Census Acknowledgements

Back to 1999 Census

We would like to acknowledge the assistance of Missouri's school districts in the data collection effort. The census of technology is extensive, with much detail that requires district technology personnel to be accurate and thorough. Without their commitment, the census would be impossible.

The following have contributed in many ways to the completion of the 1999 Census of Technology effort:

- **Census design:** Deborah Sutton, Sue Cole (DESE*), Bill Giddings (MOREnet**), Bill Elder (OSEDA***)
- **Software implementation:** Kenneth Murphy, Mary Lynn Murphy (OSEDA)
- **Web page design:** Diana Hammonds, Courtney Morris (OSEDA)
- **Database management:** Mary Lynn Murphy (OSEDA)
- **Data collection and census administration:** John Hagar (OSEDA)
- **Data analysis, verification and reporting:** John Blodgett (OSEDA)

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